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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,288	07/14/2003	Mahadeva P. Sinha	06618-914001/CIT-3721	7721
20985	7590	02/08/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			ROY, SIKHA	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,288

Applicant(s)

SINHA, MAHADEVA P.

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Preliminary Amendment, filed on November 12, 2003 has been entered and is acknowledged by the Examiner.

Drawings

Fig. 1 and Fig.2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the ion pump comprising GCMS system as claimed in claim 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

The specification does not include the section 'Brief Description of the Drawings'.

Page 5 line 1 of section [0017] 'is' should be deleted.

Page 7 line 1 of section [0027] 'magnets forming the anode element' should be replaced with --magnets disposed on the anode element--

Appropriate corrections are required.

The abstract of the disclosure is objected to because of the following.

Line 1 section [0032] 'An one pump' should be replaced by --An ion pump--.

Correction is required. See MPEP § 608.01(b).

Claims 12 and 19 are objected to because of the following informalities:

In claim 12 line 2 'a system' should be replaced by --system--.

In claim 19 line 2 'vacuum tight a housing' should be replaced by --vacuum tight housing--.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of the trademark 'hiperco-50' in claim 4 to identify or describe the magnetic material constitutes an improper use of the trade name and renders the claim indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 9 and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,594,054 to Ishimaru et al.

Regarding claim 1 Ishimaru discloses (Figs. 2 and 3 column 2 lines 27-63, column 3 lines 24-45) an ion pump comprising combined housing (pump casing) and cathode structure 12 formed of cathode material and forming a vacuum tight seal and having a vessel connected to the housing through the flange 14, an anode 18 formed within the housing, a magnet 11 surrounding at least a portion of the housing and a

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connection for voltage source (high voltage wire) 21 for providing high voltage that allows pumping.

From Fig. 3 it is clearly evident that the magnet 11 is formed in a substantially C shape.

Referring to claim 9 Ishimaru inherently discloses a high dc voltage (approximately 5.5 kv) source providing the voltage between the anode and the housing (pump casing).

Regarding claim 14 Ishimaru discloses (column 2 lines 60-63) the method of forming anion pump comprising using the vacuum housing serving as the cathode of the ion pump.

Regarding claim 15 Ishimaru discloses (Fig. 4 column 2 lines 53-55) anodes formed of plurality of cylinders 18 within the vacuum housing.

Regarding claims 16 and 17 Ishimaru discloses the method of forming the ion pump comprises providing magnetic field by the magnet 11 and applying a potential difference between the vacuum housing and the anodes causing ion pumping.

Claims 1, 2, 4, 6, 9, 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 3,994,625 to Welch.

Regarding claim 1 Welch discloses (Fig. 2 column 2 lines 34-48, column 3 lines 1-10, claims 5,6) an ion pump comprising a combined housing and cathode structure (envelope having a tubular side wall 13 and two end walls comprising active metal inner surfaces forming the cathode) formed of the cathode material and forming a vacuum

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tight seal and having a vessel connected to the housing (via exhaust tubulation 31), an anode 12 formed within the housing a magnet 37 surrounding at least a portion of the housing and a connection (feed through 14 Fig.1) for a voltage source that allows pumping.

Regarding claim 2 Welch discloses (column 2 lines 43-45) cathode plates forming part of the tubular housing is formed of titanium.

Regarding claim 4 Welch discloses the magnet (37,38) is made of ferrite magnetic material.

Regarding claim 6 Welch discloses (column 3 lines 59-66) the anode is made of plurality of cylindrical elements 12 having openings.

Regarding claim 9 Welch inherently discloses a high voltage source applying anode potential between the anode and the housing (cathode plates) 16.

Regarding claim 14 Welch discloses the method of forming an ion pump comprising using a vacuum housing, two end walls of which act as cathode.

Regarding claim 15 Welch discloses the method of forming ion pump comprises using plurality of anodes 12 within the housing.

Regarding claims 16 and 17 Welch discloses the method further comprises providing a magnetic field and applying a potential difference between the housing and the anode to cause ion pumping.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5,7,8, 10, 11,18 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,994,625 to Welch, and further in view of U.S. Patent 3,460,745 to Lamont.

Claim 5 differs from Welch in that Welch does not exemplify the housing and cathode structure including plurality of substantially extending posts which extend towards the anode.

Lamont in analogous art of getter ion pump discloses (Figs. 1,2,3 column 3 lines 1-15) cathode plates 5 comprising projections 6 such as cylindrical posts extending towards the anode 4. Lamont further notes (column 2 lines 24-43) this configuration provides sputtering taking place from the free ends and the sides of the post whereby the pumping speed of the pump is increased.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the plurality of substantially extending posts from the cathode of Welch as taught by Lamont for providing sputtering taking place from the free ends and the sides of the post and thus increasing the pumping speed of the pump.

Regarding claim 7 Lamont discloses the extending posts from cathode and housing extend in similar direction to the axis of the cylindrical elements (posts coaxially aligned with the axis of the cylindrical anode).

Regarding claim 8 Lamont discloses the posts extend and terminate at a point within the cylindrical anode.

Regarding claim 10 Welch and Lamont disclose an ion pump comprising a vacuum tight housing formed of titanium, anode formed of cylinders extending along a specified direction within the chamber and having electrical connection to the outside of the chamber, the housing (with cathode plates) having inner surface with at least first and second posts of titanium (getter material) which extend inside the anode cylinder and a magnet surrounding at least a portion of the housing and forming a magnetic field within the housing.

Claim 11 Lamont discloses (column 3 lines 15-19) the magnetic field extends along a direction coaxial with the axis of the anode.

Claim 18 essentially recites the same limitations as of claims 6 and 8 and hence is rejected for the same reason.

Claim 19 essentially recites the same limitation of claim 10 and hence is rejected for the same reason. Additionally Welch discloses a vacuum tight connector 31 for sealing the pump to the structure to be evacuated.

Regarding claim 20 Welch discloses the ion pump further comprising a magnet surrounding at least a portion of the housing.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,994,625 to Welch, and U.S. Patent 3,460,745 to Lamont and further in view of U.S. Patent 5,525,799 to Andresen et al.

Regarding claim 12 Welch and Lamont are silent about a GCMS system receiving its vacuum from the ion pump.

Andresen in relevant art discloses a GCMS system having an ion pump attached, for removing trace of gas impurities.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include a GCMS system attached with the ion pump of Welch and Lamont as suggested by Andresen for removing trace of gas impurities from the GCMS system.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,994,625 to Welch, and U.S. Patent 3,460,745 to Lamont and further in view of U.S. Patent 6,805,980 to Uehara.

Regarding claim 13 Welch discloses magnet formed of permanent ferrite material. Welch does not explicitly disclose the magnet formed of high energy product value magnet.

Uehara in pertinent art of thin film magnet production discloses (column 1 lines 15-25) thin film permanent magnets formed of Nd-Fe-B based magnetic material and Sm-Co based magnetic material yield high magnetic energy product and therefore can be used in a miniaturized electrical apparatuses.

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Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to substitute thin film high magnetic energy product value magnet for the permanent ferrite magnet in the ion pump of Welch and Lamont for providing high magnetic energy and enhanced performance with reduced weight of the ion pump.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 4,097,195 to Hill discloses vacuum envelope walls made of cathode material. U.S. Patent 6,004,104 to Rutherford discloses special cathode structure with spirals of titanium material used in an ion pump.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

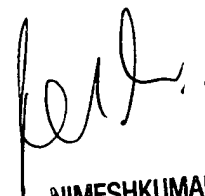
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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